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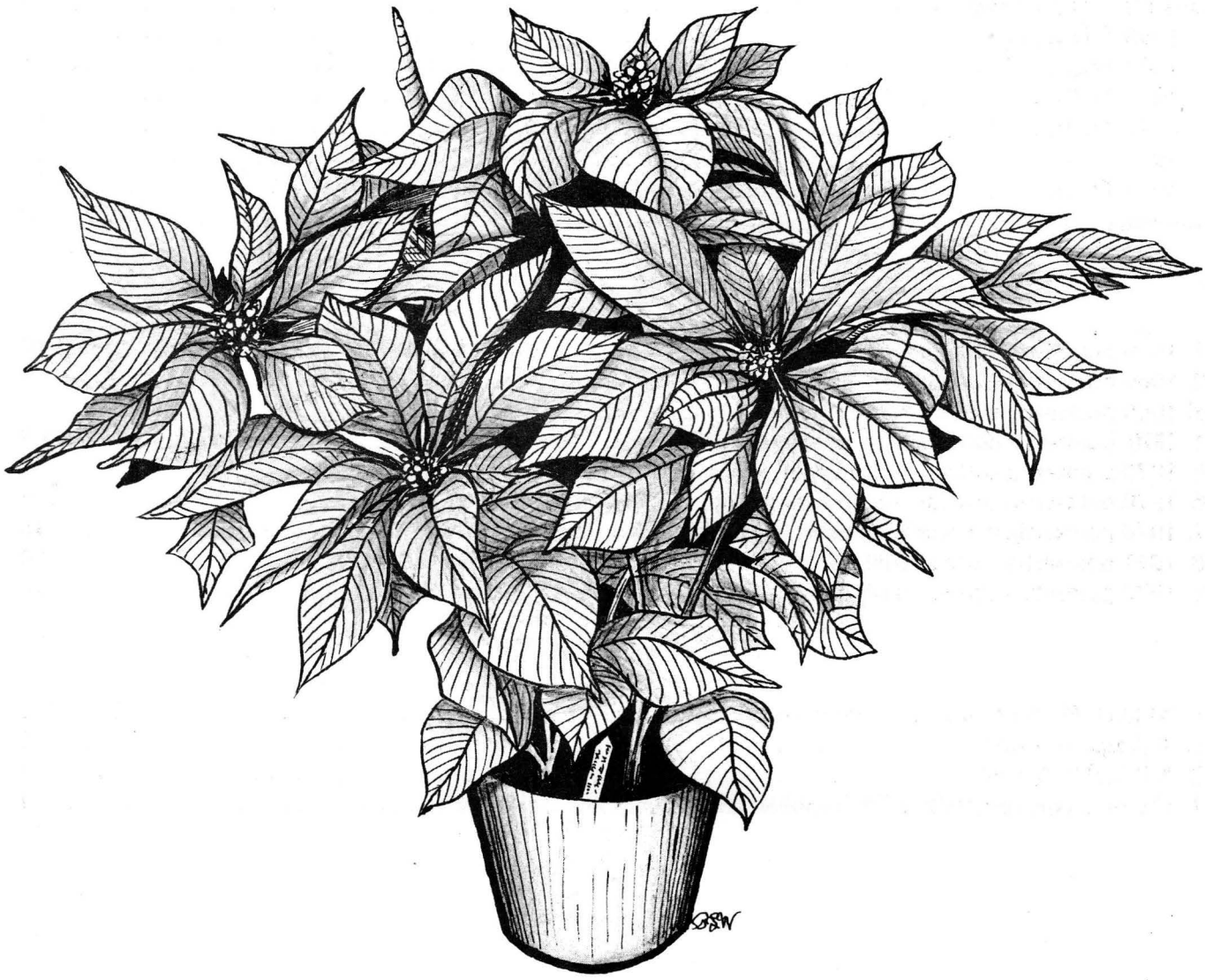

Poinsettia Evaluations, 1969 - 1974

Richard A. Criley, Philip E. Parvin, Tadashi Higaki, and Fred D. Rauch

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INTRODUCTION

In Hawaii, as in many other parts of the United States, the poinsettia has become a symbol of the Christmas holiday. Since the demand is always great, high quality has not always been necessary for the product to be salable. Recently, new cultural methods and new cultivars have been developed in attempts to produce plants of high quality.

In addition to the popular red cultivars of the poinsettia, Euphorbia pulcherrima Willd., white, pink, and variegated forms are available. The showy portion is not really the flower but a modified leaf, called a bract. The short days of September and October trigger the plant to initiate these bracts, which mature and color in mid-December.

The double red poinsettia most widely grown in Hawaii is either 'Henrietta Ecke' or 'Henrietta Ecke Supreme.' Its vigorous habit of growth and normal season of bloom have also led to its use in outdoor plantings as an ornamental shrub. The most notable example has been the Board of Water Supply hedge along the Pali Highway in Honolulu. In 1950, a form with recurving bracts was selected and named 'Ecke's Flaming Sphere.' It forms a weak potted plant but has been used as an ornamental in some outdoor plantings.

The normal local practice in establishing new plants is to take hardwood cuttings in late February or March. Four to six cuttings are rooted directly in the container in which they are to be grown and given a minimum of attention through the summer. In late summer, any long shoots that have developed are cut back and the regrowth is allowed to bloom naturally for Christmas. Because of poor cultural practices, such as crowding, poor drainage, and lack of fertilizer, the resulting plants are often leggy and leafless with but a few red bracts.

The release of new poinsettia cultivars by plant breeders in California and Ohio and by the USDA offered promise of better-quality pot plants. The Hawaii Agricultural Experiment Station undertook to evaluate a number of cultivars from 1969 to 1974.

SOURCES OF CUTTINGS

Rooted terminal cuttings of selected cultivars were donated by two firms specializing in poinsettia production. In 1969 and 1972-74, all cultivars were received courtesy of Paul Ecke Poinsettias, Encinitas, California, 92024, and in 1970 and 1971 from both Ecke and Mikkelsen's, Inc., Box 1536, Ashtabula, Ohio, 44004.

New cultivars were selected on the basis of better bract texture, longer leaf retention, and vigor. It was known that some new cultivars required warmer night temperatures and some required cooler night temperatures than the current favorites. Others were reported to excel as pinched plants or as single-stem specialty items.

GENERAL CULTURE

In 1969, ten cultivars were selected for evaluation at three locations: in a glasshouse at the University of Hawaii main campus in Manoa, in an unheated fiberglass house at the Maui Research Center located at 3000 feet elevation at Kula, and in an unheated fiberglass house at the Waiakea Research Station located at 600 feet elevation on Hawaii. Plants received at the three sites on July 15 were pinched August 25, but those received September 15 were grown as single-stem plants. There were two cuttings per 6-inch pot for the pinch program and three cuttings per 6-inch pot for the single-stem program.

At Manoa, the growing medium consisted of soil, peat, and perlite (2:1:1) with lime and superphosphate added. The plants were watered daily with a liquid feed consisting of ½ pound 21-21-21 per 100 gallons. Night temperatures were above 70° F through late summer and between 65 and 70° F during fall and winter.

At Kula, a 2:1:1 potting mix (soil, peat, and perlite) was used. Plants were fertilized twice a week with 1½ pounds 21-21-21 per 100 gallons. During July, August, and September, the temperatures ranged from 60° F at night to 85° F during the day. During October and November, without heat, the day temperatures would be in the 70s and the night temperatures in the mid and low 50s.

At Waiakea, a 1:1:1 potting mix was used. Osmocote 18-6-12 at 4 ounces per cubic foot of mix was used as a nutrient source. The minimum night temperature ranged from 55 to 60° F.

In 1970, only the Kula and Waiakea Stations took part in the trials. Twenty-two cultivars were chosen, and shipment was scheduled for early September. On September 3 at Waiakea and September 9 at Kula, the rooted terminal cuttings were potted, two per pot for pinched plants and three per pot for single-stem production. Pinching was carried out on September 16 at Waiakea and September 21 at Kula. Both Stations were able to provide a minimum of 60° F night temperature, with Waiakea ranging up to 65° F.

In 1971, only the Kula Station scheduled trials. Fourteen cultivars were potted September 4, two per 6-inch pot. Pinching was carried out 10 days later. Growing conditions were as described for the 1970 trials.

No variety trials were scheduled for 1972, but a small number of new releases by the Ecke firm were received at Manoa. These were potted September 21 in a 1:1 volcanite-wood shavings mix with lime (7 oz/cu ft), superphosphate (7 oz/cu ft), and Osmocote 14-14-14 (6 oz/cu ft) added. Two cuttings were planted per 6-inch pot for pinched plants and three per pot for single-stem production. Night temperatures ranged from 70 to 72° F through early November, dropping to 68° F for most of November and down to 60 to 64° F during the first two weeks of December.

In 1973, the growing conditions were the same as in 1972. In 1974, the conditions were the same as in 1969, and a soil-based mix was again used because a synthetic mix was not available.

OBSERVATIONS AND EVALUATION

In view of the differences in growing conditions, particularly with respect to night temperatures, recommendations differ with the reports of the three Stations. During 1969, the evaluation of new cultivars at Kula and Waiakea was hampered by the cool nights which kept the plants short and delayed flowering and maturation. At Manoa, high night temperatures and a heavy feeding program produced plants that were too tall for their containers. Far more desirable plants were produced in 1970 at Kula and Waiakea when the night temperatures could be maintained at a 60° F minimum.

1969 Trials

Manoa (Table 1)

I. Pinched Crop
   A. Reds
      1. 'Eckespoint C-1.' This cultivar is a strong grower with a vigorous root system. The flower head averaged more than 1 foot in diameter, but it was often split and a lighter red than typical for the cultivar.
      2. 'Eckespoint D-3.' Although somewhat brittle, this cultivar matured about the right time for Christmas sale and was more compact than others in the trial. It had a bright-red color which apparently was not weakened by the high temperatures, although the flower heads tended to split slightly.
      3. 'San Diego (Eckespoint D-1).' This cultivar bloomed early and would have been fine for Thanksgiving sale. While it maintained a good, bright-red color, it split badly and dropped its cyathia.
      4. 'Eckespoint C-35.' This cultivar also flowered in late November. Its unique characteristic was color development in the leaves below the inflorescence. The inflorescences were about 9 inches in diameter, and, if the height had been controlled, the plant would have made a well-proportioned pot with six flowering breaks. Difficulty was encountered in obtaining dark-green foliage.
      5. Other red cultivars. 'Ecke's Flaming Sphere' and 'Henrietta Ecke' were weak-stemmed with much foliage loss. 'Paul Mikkelsen' split badly and showed delayed color development. 'Annette Hegg' was a very strong grower and held its leaves well, but, with nearly ten breaks per pot, only a half dozen breaks developed to proper size. Some splitting was encountered, and the color was not intense. 'Annette Hegg' is apparently a heavy feeder because difficulty was experienced in maintaining good color.
   B. White
      1. 'New Ecke White.' This cultivar produced thick stems, heavy foliage, and large inflorescences. Unfortunately, staking would have been necessary. The inflorescences split badly, and the cyathia were very sticky. The bracts were large but tended to remain greenish. This cultivar was not satisfactory as a pinched plant.
   C. Pink
      1. 'Eckespoint C-54 Pink.' This cultivar developed strong, sturdy plants that averaged close to six breaks per pot. The inflorescences were tight and did not split. Color development was some-

Table 1. 1969 poinsettia cultivar trial, Manoa glasshouses

Variety	Date of Pollen appearance[1]	Date of Salability[2]	Average flower diameter (in)	Plant height (in)	Breaks Length (in)	Breaks No./pot
Single-stem crop						
Annette Hegg	11/30	12/7	18.7	23.5		
Eckespoint C-1	12/9	12/16	14.7	33.4		
Eckespoint C-35	11/25	12/2	10.7	22.2		
San Diego (Eckespoint D-1)	11/18	11/25	15.0	22.5		
Eckespoint D-3	12/10	12/17	12.6	22.0		
Ecke's Flaming Sphere	11/29	12/1	10.0	19.0		
Henrietta Ecke	12/10	12/14	16.3	29.3		
Paul Mikkelsen	12/3	12/10	17.4	30.7		
Eckespoint C-54 Pink	11/20	12/1	14.0	24.5		
New Ecke White	11/24	12/2	12.6	25.3		
Pinched crop						
Annette Hegg	12/11	12/18	12.0	24.0	21.5	8.8
Eckespoint C-1	12/19	12/28	12.3	24.2	18.5	3.5[3]
Eckespoint C-35	11/22	11/29	9.5	30.5	26.4	5.8
San Diego (Eckespoint D-1)	11/1	11/9	12.2	26.1	19.8	5.5
Eckespoint D-3	12/7	12/14	12.5	34.0	27.0	5.1
Ecke's Flaming Sphere	11/30	12/2	3.5	15.6	11.5	4.6
Henrietta Ecke	12/8	12/16	13.4	30.5	26.2	5.5
Paul Mikkelsen	12/14	12/20	12.8	43.0	30.8	5.4
Eckespoint C-54 Pink	12/7	12/15	11.2	37.2	31.7	4.6[3]
New Ecke White	11/29	12/6	9.7	29.5	23.5	5.3

[1]On the first primary cyathia that bloomed in each pot.
[2]When 50 percent of the pots were judged ready to be marketed at the retail level.
[3]The majority of the pots suffered from root rot.

what irregular and a lighter pink than characteristic of plants grown under cooler conditions.

II. Single-Stem Crop

A. Reds

1. 'Eckespoint C-1.' This cultivar produced very large inflorescences, although some splitting did occur. The plants were sturdy, vigorous, and retained their foliage well. This cultivar could be grown very successfully by propagating later or by using retardants.
2. 'Eckespoint D-3.' This cultivar was preferable to 'D-1' as a single-stem potted plant because of less splitting and later flowering. Both had good color and compact growth.
3. 'Eckespoint C-35.' Although it bloomed too early, this cultivar had good color, height, and inflorescence size. There was no splitting, and foliage retention was excellent.
4. Other red cultivars. The other red cultivars ('Annette Hegg,' 'Ecke's Flaming Sphere,' 'Paul Mikkelsen,' and 'Henrietta Ecke') did not per-

form well as single-stemmed plants. For the most part, the stems were weak, foliage was shed, and the inflorescences split. 'Annette Hegg' is self-branching and produced a number of nonflowering laterals that would have to be removed; thus, it could not be recommended as a single-stem crop.

In summary, temperatures were too high at the Manoa glasshouses for the production of the best-quality plants. The main faults were excessive height, split inflorescences, and less-intense color development than desired. For the recommended cultivars, a delay in planting until early September would help to produce shorter plants. Plants should be pinched as soon as they are established because flower initiation will occur by mid-October. The use of growth retardants would be of benefit as well.

Waiakea (Table 2)

Due to delays in shipment, both the July and September plantings got off to a poor start. In addition, there was no heat in the fiberglass house, so most cultivars were short and delayed. As pinched crops, however, 'Annette Hegg' and 'Eckespoint D-3' showed promise. As single-stem plants, 'Eckespoint C-35' and 'Annette Hegg' were the best choices.

Table 2. 1969 poinsettia cultivar trial, Waiakea Research Station

Variety	Date of pollen appearance[1]	Flower diameter (in) Max.	Min.	Plant height (in)	No. breaks/pot
Single-stem crop					
Annette Hegg	1/11	9.4	7.9	7.7	
Eckespoint C-1	1/11	9.0	7.4	6.2	
Eckespoint C-35	12/17	9.1	8.1	5.6	
San Diego (Eckespoint D-1)	12/24	7.8	7.3	5.0	
Eckespoint D-3	1/11	7.7	6.7	7.7	
Henrietta Ecke	12/24	12.0	10.0	5.0	
Paul Mikkelsen	12/18	10.8	9.5	10.1	
Eckespoint C-54 Pink	12/24	7.2	6.0	4.5	
New Ecke White	12/24	10.5	10.2	6.0	
Pinched crop					
Annette Hegg	12/3	11.5	8.6	10.3	5.3
Eckespoint C-1	12/11	13.0	10.1	9.0	3.4
Eckespoint C-35	11/22	11.0	8.0	7.8	4.4
San Diego (Eckespoint D-1)	11/20	8.8	7.0	6.5	2.3
Eckespoint D-3	12/10	12.3	10.8	10.3	3.3
Henrietta Ecke	12/3	11.5	10.5	7.5	4.7
Paul Mikkelsen	12/17	13.0	11.0	11.7	3.6
Eckespoint C-54 Pink	12/3	10.1	7.3	6.7	3.9
New Ecke White	12/10	8.4	7.1	5.9	2.9

[1]On the first primary cyathia that bloomed in each pot.

Table 3. 1969 poinsettia cultivar trial, Maui Research Center, Kula

Variety	Date of pollen appearance[1]	Flower diameter (in) Max.	Min.	Plant height (in)	No. breaks/pot
Single-stem crop					
Annette Hegg	12/8	9.8	8.4	5.8	
Eckespoint C-1	12/19	9.7	8.5	7.5	
Eckespoint C-35	12/4	9.0	8.3	6.9	
San Diego (Eckespoint D-1)	12/5	10.6	9.6	6.5	
Eckespoint D-3	12/10	7.6	6.3	5.2	
Henrietta Ecke	12/12	10.5	9.8	6.3	
Paul Mikkelsen	12/9	7.8	7.0	6.2	
Small's Red Velvet	11/30	11.5	10.4	7.5	
Eckespoint C-54 Pink	12/11	7.6	7.5	6.3	
New Ecke White	12/9	9.2	8.2	7.2	
Pinched crop					
Annette Hegg	11/30	7.8	6.5	7.7	6.0
Eckespoint C-1	12/7	8.0	6.8	7.6	4.1
Eckespoint C-35	11/30	7.5	6.3	6.5	5.0
San Diego (Eckespoint D-1)	11/26	8.3	7.3	7.5	5.1
Eckespoint D-3	12/6	7.5	6.3	8.7	4.1
Henrietta Ecke	11/28	10.5	9.6	10.4	4.7
Paul Mikkelsen	11/28	8.5	7.5	8.7	4.0
Small's Red Velvet	11/28	9.1	8.2	7.7	4.6
Eckespoint C-54 Pink	11/28	7.1	6.3	7.5	5.1
New Ecke White	12/1	7.9	6.8	8.5	4.2

[1]On the first primary cyathia that bloomed in each pot.

Kula (Table 3)

Cool temperatures prevented most cultivars from attaining any great size or advanced degree of maturity. The single-stem pots planted in September produced slightly better quality blooms than the pinched plants. The most breaks were produced by 'Annette Hegg,' while 'San Diego (Eckespoint D-1),' 'C-35,' and 'C-54 Pink' were also satisfactory although very short.

1970 Trials

Waiakea (Tables 4 and 5)

I. Pinched Crop
   A. Reds
      1. 'Eckespoint D-3.' With bright-red bracts, dark-green foliage, and a compact growth habit, this cultivar was rated the best of 15 poinsettias. While its average of 5.4 stems per pot was not the highest, the 11-inch diameter inflorescences created a very attractive display.
      2. 'San Diego (Eckespoint D-1).' Although an early bloomer, this cul-

Table 4. 1970 poinsettia cultivar trial, pinched crop, Waiakea Research Station

Variety	Date of Pollen appearance[1]	Date of Sala-bility[2]	Flower diameter (in) Max.	Flower diameter (in) Min.	Breaks Length (in)	Breaks No./pot
Reds						
Annette Hegg	12/19	12/24	9.8	7.6	7.2	7.8
Ecke's Flaming Sphere	12/3	12/6	3.8	3.8	6.8	6.6
Eckespoint C-1	12/6	12/12	14.8	12.6	14.8	6.6
Eckespoint C-35	11/26	12/3	9.2	8.4	7.0	7.6
Eckespoint D-3	12/6	12/9	11.4	10.0	8.2	5.4
Mikkel™ Blaze	12/7	12/10	11.2	9.0	15.8	6.0
Mikkel™ Cardinal	12/23	12/29	11.0	8.8	18.8	5.2
Mikkel™ Flame	11/12	11/19	13.2	10.6	11.0	6.2
Mikkel™ Glow	11/12	11/24	11.0	9.2	7.2	6.2
Mikkel™ Rochford	12/6	12/10	10.4	9.0	11.0	15.4
Mikkelswiss	12/3	12/9	11.8	9.8	14.2	5.8
Paul Mikkelsen	12/7	12/11	13.0	11.6	16.8	5.4
Red Baron	12/7	12/11	13.4	11.2	15.2	4.8
Rudolph	12/9	12/12	12.8	10.6	14.2	6.8
San Diego (Eckespoint D-1)	12/6	12/13	10.6	9.0	7.0	8.6
Pinks						
Eckespoint C-1 Pink	12/18	12/21	12.0	10.4	13.2	6.6
Eckespoint C-54 Pink	12/6	12/10	10.4	8.6	9.0	8.0
Mikkel™ Twinkle	12/3	12/9	11.6	10.4	10.6	5.2
Whites						
Eckespoint C-64 White	12/3	12/7	11.4	9.4	7.2	7.6
Eckespoint D-7 White	12/20	12/24	11.2	9.0	18.2	7.4
Mikkel™ Sprite	12/3	12/8	11.4	9.0	11.2	6.2
White Annette Hegg	12/18	12/23	9.4	8.0	10.6	8.4

[1]On the first primary cyathia that bloomed in each pot.
[2]When 50 percent of the pots were judged ready to be marketed at the retail level.

tivar made an attractive display with an average of 8.6 bright-red inflorescences per pot. The foliage was dark green.

3. 'Eckespoint C-35.' An early bloomer like 'San Diego,' 'C-35' was an attractive pot plant because of the profusion of red bracts (normally green leaves) below the flower head. There was an average of 7.6 breaks per pot. Foliage retention was good, although the color was a medium to light green.

B. Pinks

1. 'Eckespoint C-54 Pink.' As a dark pink averaging eight flowers per pot, this cultivar ranked the best of the three pink cultivars tested. The plants were compact, but the small leaves gave the appearance of being sparsely foliaged.
2. 'Eckespoint C-1 Pink.' Very large inflorescences and an average of 6.6 breaks per pot were the bases for recommending this light-pink cultivar.

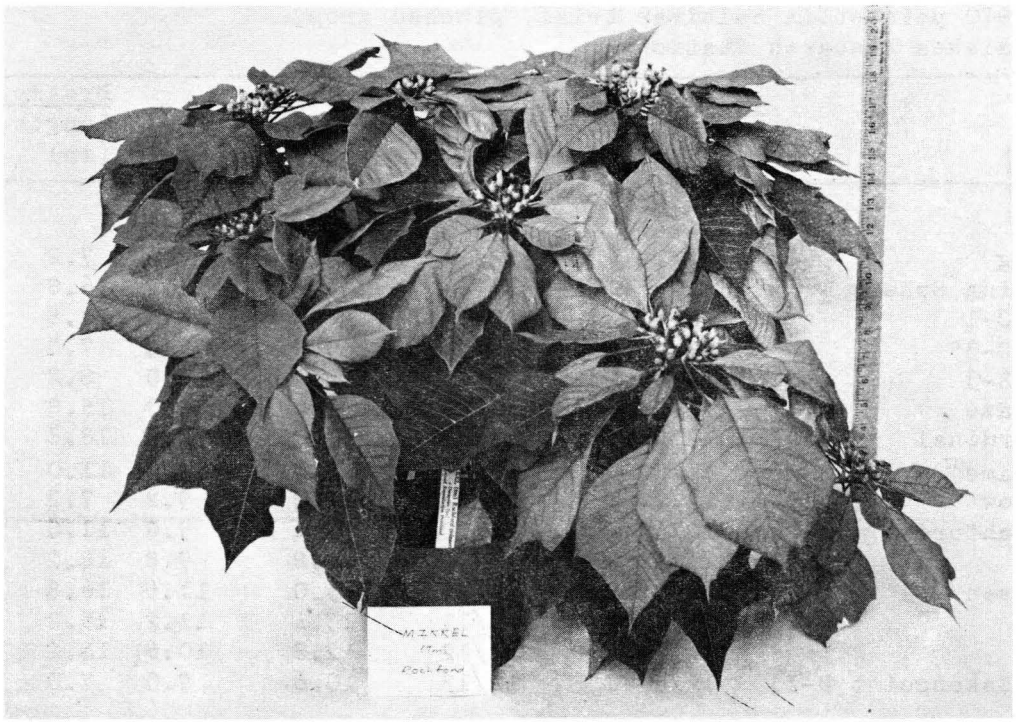

Figure 1. 'Mikkel™ Rochford' as a pinched crop produces abundant branches and flowers under the cool growing conditions of the Maui Research Center at Kula.

Figure 2. 'Eckespoint C-35' produces five or six inflorescences on two cuttings following a pinch. The bracts are smoother than on other cultivars. This cultivar is adaptable to both warm and cool locations and flowers in late November through early December.

Figure 3. **'Mikkel™ Sprite' produces large, white inflorescences on both single-stem (A) and pinched (B)** plants. It is more compact with tighter inflorescences when grown under cool conditions.

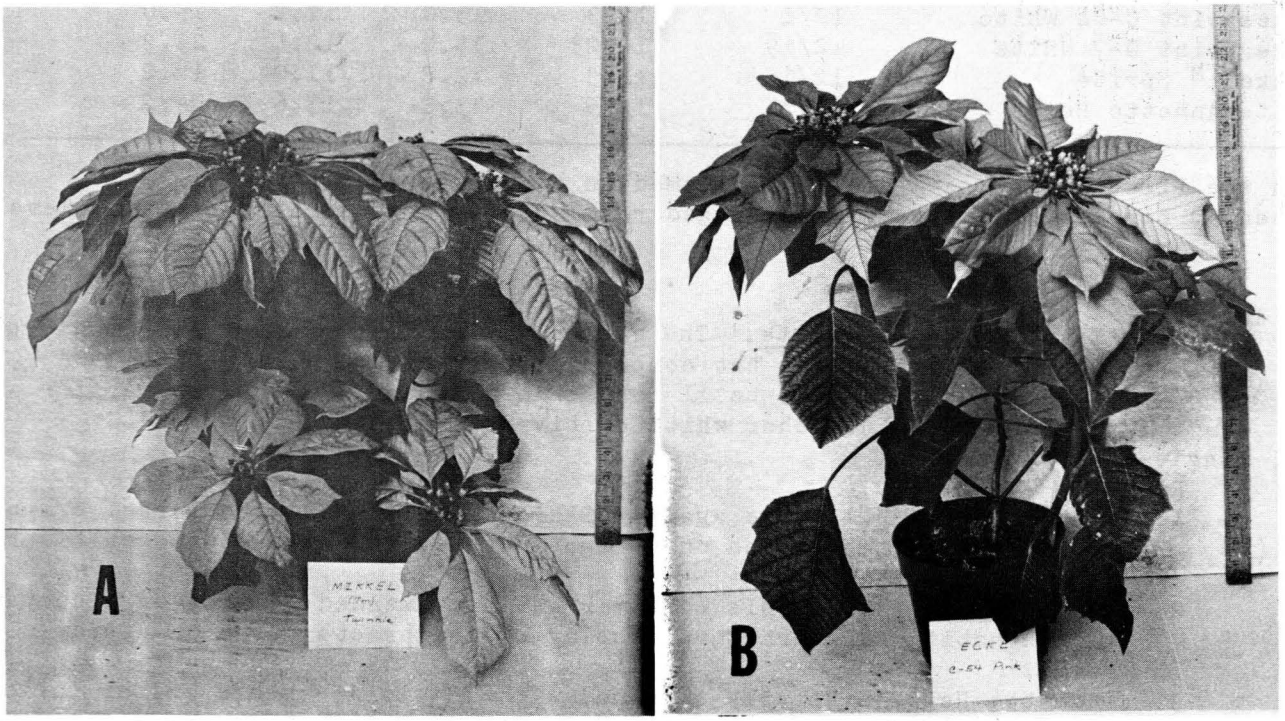

Figure 4. **The pink cultivars 'Mikkel™ Twinkle' (A) and 'Eckespoint C-54 Pink' (B) produce dark pink and good-sized bracts.** Their advantages lie in their compactness and large bracts. **'Eckespoint C-54 Pink' tolerates** warmer night temperatures better than **'Mikkel™ Twinkle.'**

Table 5. 1970 poinsettia cultivar trial, single-stem crop, Waiakea Research Station

Variety	Date of Pollen appearance[1]	Date of Salability[2]	Flower diameter (in) Max.	Flower diameter (in) Min.	Plant height (in)
Reds					
Annette Hegg	12/1	12/3	15.2	13.4	18.2
Ecke's Flaming Sphere	12/1	12/3	7.0	7.0	25.8
Eckespoint C-1	12/3	12/9	14.6	12.2	23.6
Eckespoint C-35	11/19	11/26	13.8	12.2	14.8
Eckespoint D-3	12/3	12/7	13.8	11.8	17.0
Mikkel™ Blaze	12/3	12/9	12.0	9.8	22.4
Mikkel™ Cardinal	12/22	12/28	12.2	10.4	30.2
Mikkel™ Flame	11/12	11/19	15.0	12.1	21.1
Mikkel™ Glow	11/12	11/28	14.6	12.0	15.2
Mikkel™ Rochford	12/3	12/9	14.2	12.0	16.8
Mikkelswiss	12/1	12/3	12.2	11.0	21.6
Paul Mikkelsen	12/3	12/9	15.4	13.4	27.2
Red Baron	12/3	12/9	15.0	12.8	23.8
Rudolph	12/7	12/9	15.4	13.6	22.2
San Diego (Eckespoint D-1)	11/19	11/26	14.4	10.6	15.4
Pinks					
Eckespoint C-1 Pink	12/5	12/9	14.2	12.6	21.6
Eckespoint C-54 Pink	12/3	12/7	12.6	10.6	17.4
Mikkel™ Twinkle	12/1	12/3	12.8	10.6	14.8
Whites					
Eckespoint C-64 White	12/1	12/3	13.0	11.2	15.0
Eckespoint D-7 White	12/19	12/23	15.2	12.4	23.2
Mikkel™ Sprite	12/1	12/3	12.8	11.0	18.2
White Annette Hegg	12/3	12/9	13.8	11.6	19.2

[1]On the first primary cyathia that bloomed in each pot.
[2]When 50 percent of the pots were judged ready to be marketed at the retail level.

C. White

1. 'Eckespoint C-64 White.' The factor giving this cultivar the nod over 'Mikkel™ Sprite' was the compactness of growth. The bracts were slightly whiter and 9 to 11 inches in diameter. Both were earlier to bloom than the other white cultivars evaluated.

11. Single-Stem Crop

A. Reds

1. 'Eckespoint D-3.' Once again, high-quality plants with large, bright-red inflorescences borne on upright, sturdy stems made this cultivar the top selection.
2. 'Eckespoint C-35.' This cultivar was recommended because of a compact growth habit and attractive display of red bracts borne on sturdy stems.
3. 'Annette Hegg.' Heavily foliaged with 13- to 15-inch diameter inflorescences and a rich, violet-red color, 'Annette Hegg' was a little on the tall side but not leggy.

4. 'San Diego (Eckespoint D-1).' As a single-stem plant, this cultivar produced large, bright-red flowers on medium-sized plants.
5. Other red cultivars. The USDA introduction 'Rudolph' produced strong stems but was a little too tall. Its dark-red bracts and dark-green foliage were strong features.

B. Pink
1. 'Eckespoint C-54 Pink.' With stronger color than 'Eckespoint C-1,' 'C-54' gets the nod for being shorter, although the flowers are not quite as large.

C. White
1. 'Mikkel™ Sprite.' Although a little on the tall side, this cultivar was more upright with less tendency to legginess than some of the others in the trial. The foliage was good, and the cream-white bracts (about 1 foot in diameter) were symmetrical and flat.

Kula (Tables 6 and 7)

I. Pinched Crop

A. Reds
1. 'Mikkel™ Rochford.' This cultivar was one of the most interesting of the new cultivars. It produced an average of almost eight large bracts from a single cutting. The bracts averaged 10 by 12 inches and were borne on compact plants, 15 inches high, covered with attractive green foliage.
2. 'Eckespoint C-35.' The pots of this cultivar presented a very neat appearance and were less crowded than 'Mikkel™ Rochford.' The lower foliage showed slight chlorosis. The plants average 14 inches in height.
3. 'Mikkel™ Blaze.' This variety produces wide, full bracts, 9 by 11 inches. When treated with Cycocel, the bracts become textured and wavy, giving a deeper, fuller effect. The foliage is smooth and almost glossy. The plants were of good size, averaging about 18 inches in height when treated with Cycocel.
4. Other red cultivars. 'Annette Hegg' flowered a little late; it should be grown as a pinched crop only. It is too short with Cycocel. 'Ecke's Flaming Sphere' is best as a pinched crop with Cycocel. It also tends to be spindly in growth, but it is a good novelty. 'Eckespoint C-1,' if pinched, is best without Cycocel; if it is single-stem, use Cycocel. 'Mikkel™ Blaze' is the recommended cultivar for pinched crop, but the single-stem crop splits badly. 'Mikkel™ Cardinal' as a pinched crop is too late. The single-stem crop is best with Cycocel, but it is still a little late. 'Mikkel™ Flame' as a pinched crop is best without Cycocel. The single-stem crop has large bracts but flowers too early and splits slightly. 'Mikkel-swiss' is too tall if grown without Cycocel regardless of pinch and also flowers a little early. 'Paul Mikkelsen' is best grown with Cycocel regardless of pinch. The single-stem crop flowers a little early. 'Red Baron' has narrow-pointed bracts. The pinched crop flowers a little late. The single-stem crop is best with Cycocel, and it bloomed on time. 'Rudolph' as a pinched crop is best without Cycocel but has smaller bracts than many cultivars. As a single-stem crop, it is best with Cycocel and is more even, although it flowers a little early.

B. Pinks
1. 'Mikkel™ Twinkle.' This cultivar is recommended primarily because of the large bracts, but it faded somewhat and bloomed about a week too early.

Table 6. 1970 poinsettia cultivar trial, pinched crop, Maui Research Center, Kula

Variety	Date of Pollen appearance[1]	Salability[2]	Flower diameter (in) Max.	Flower diameter (in) Min.	Plant height (in)	Stem length (in)	No. stems/ cutting
Reds							
Annette Hegg	11/27	12/6	9.7	8.3	14.3	12.0	3.7
Ecke's Flaming Sphere		11/27	4.7		15.7	12.0	4.0
Eckespoint C-1	12/8	12/8	9.7	8.3	15.0	11.3	5.0
Eckespoint C-35	12/2	11/29	10.0	8.3	14.0	9.0	4.0
Eckespoint D-3	12/8	12/9	10.7	9.0	14.0	11.0	3.3
Mikkel™ Blaze	11/27	12/2	10.7	10.0	20.3	16.0	3.0
Mikkel™ Cardinal	12/7	12/13	10.7	10.0	23.0	15.7	4.0
Mikkel™ Flame	11/16	11/24	12.3	10.0	17.3	12.3	3.3
Mikkel™ Glow	11/16	11/23	10.7	21.0	10.7	7.3	3.3
Mikkel™ Rochford	11/28	12/1	11.7	10.0	15.0	11.7	7.7
Mikkelswiss	12/2	12/4	9.0	8.0	19.7	14.7	3.0
Paul Mikkelsen	11/29	12/7	9.7	8.0	20.0	15.7	3.7
Red Baron	11/29	12/10	10.7	9.3	18.0	14.7	3.7
Rudolph	12/4	12/7	10.3	9.3	18.0	13.7	4.0
San Diego (Eckespoint D-1)	11/30	12/2	9.3	8.3	13.0	9.0	3.7
Pinks							
Eckespoint C-1 Pink	12/15	[3]					
Eckespoint C-54 Pink	11/28	11/30	9.0	7.7	14.0	9.3	5.0
Mikkel™ Twinkle	11/18	11/24	12.7	9.3	13.0	7.7	4.0
Whites							
Eckespoint C-64 White	11/27	12/3	9.7	8.3	13.7	9.0	3.0
Eckespoint D-7 White		[3]					
Mikkel™ Sprite	11/23	11/25	10.7	9.3	18.7	12.7	4.3
White Annette Hegg	11/28	12/4	10.0	9.5	14.5	10.5	5.0

[1]On the first primary cyathia that bloomed in each pot.

[2]When 50 percent of the pots were judged ready to be marketed at the retail level.

[3]Plant was not salable at the termination of the test.

2. Other pink cultivars. Other cultivars were too small under Kula conditions. 'Eckespoint C-54 Pink' was the darkest; 'Eckespoint C-1 Pink' was late.

C. Whites

1. 'Mikkel™ Sprite.' This cultivar was the only white one that bloomed in time for Christmas sales. The bracts were ivory-white, 9 by 11 inches on 19-inch plants.
2. Other white cultivars. Other cultivars were either too early ('Eckespoint C-64 White') or too late ('White Annette Hegg' and 'Eckespoint D-7 White'). Both 'C-64 White' and 'White Annette Hegg' were satisfactory as to degree of whiteness.

Table 7. 1970 poinsettia cultivar trial, single-stem crop, Maui Research Center, Kula

Variety	Date of Pollen appearance[1]	Date of Salability[2]	Flower diameter (in) Max.	Flower diameter (in) Min.	Plant height (in)
Reds					
Annette Hegg	12/2	12/10	12.0	10.0	18.7
Ecke's Flaming Sphere		11/23	6.0		26.7
Eckespoint C-1	12/2	12/3	15.0	13.0	20.0
Eckespoint C-35	11/27	11/23	13.3	12.0	19.3
Eckespoint D-3	12/1	11/23	10.7	10.2	17.3
Mikkel™ Blaze	11/16	11/24	12.0	11.0	21.3
Mikkel™ Cardinal	11/30	12/6	13.7	12.0	25.3
Mikkel™ Flame	11/16	11/24	16.0	14.0	19.0
Mikkel™ Glow	11/16	11/23	13.7	12.7	15.3
Mikkel™ Rochford	11/18	11/28	13.3	12.3	16.3
Mikkelswiss	11/24	11/29	12.7	10.7	19.3
Paul Mikkelsen	11/16	11/25	13.0	11.3	15.0
Red Baron	11/21	11/28	13.7	11.7	18.3
Rudolph	12/2	12/3	13.0	11.7	18.3
San Diego (Eckespoint D-1)	11/23	11/23	13.0	11.0	18.3
Pinks					
Eckespoint C-1 Pink	12/5	12/9	12.0	10.7	19.0
Eckespoint C-54 Pink	11/30	11/30	11.3	10.3	18.0
Mikkel™ Twinkle	11/23	11/26	13.0	12.0	18.3
Whites					
Eckespoint C-64 White	11/18	11/28	13.3	12.3	14.3
Eckespoint D-7 White	12/16	3/	12.5	11.5	22.5
Mikkel™ Sprite	11/16	11/23	11.7	11.0	20.0
White Annette Hegg	11/20	12/3	11.0	10.0	19.5

[1]On the first primary cyathia that bloomed in each pot.

[2]When 50 percent of the pots were judged ready to be marketed at the retail level.

[3]Plant was not salable at the termination of the test.

II. Single-Stem Crop

A. Reds

1. 'Mikkel™ Glow.' Although a little early, 'Mikkel™ Glow' is recommended for its large, intense-red bracts. The inflorescences were 13 by 14 inches on compact 15-inch plants.
2. 'Eckespoint D-3.' Either with or without Cycocel, this cultivar produced large, deep-red bracts on strong plants.

B. Pink

1. 'Eckespoint C-54 Pink.' This cultivar produced the darkest pink color with medium-sized bracts. The stems were sturdy, and Cycocel was not needed.

C. White

1. 'Mikkel™ Sprite.' Exhibition-quality blooms were borne on 20-inch plants. This cultivar had the best flowering response for Christmas sales.

1971 Trials

Kula (Table 8)

When pinched, both the Hegg and Rochford series produced heavily branched plants. The breaks tended to be somewhat brittle. Interesting variations of the standard reds were the pink, white, and marbled cultivars.

Both the Hegg and Rochford series are best if grown pinched and pruned to reduce each plant to three or four breaks.

Table 8. 1971 poinsettia cultivar trial, pinched crop, Maui Research Center, Kula

Variety	Date of Pollen appearance[1]	Date of Salability[2]	Flower diameter (in) Max.	Flower diameter (in) Min.	Plant height (in)	No. breaks/pot
Reds						
Annette Hegg	12/2	12/3	12.8	11.2	17.2	8.5
Dark Red Hegg	12/2	12/3	13.4	11.9	18.4	7.0
Mikkel™ Rochford	12/1	12/3	14.2	12.5	16.1	6.2
Mikkel™ Imp. Rochford	12/9	12/8	12.5	11.5	16.2	6.0
Dark Rochford	12/12	12/13	10.3	9.0	14.3	6.3
Vivid Rochford	12/8	12/5	13.7	12.1	14.9	5.8
Mikkel™ Scandia	12/4	12/6	12.7	11.0	14.2	7.0
Mikkel™ Bright	12/2	12/3	14.5	12.2	16.9	5.0
Pinks						
Pink Annette Hegg	12/2	12/4	11.9	10.5	18.6	8.8
Pink Rochford	12/5	12/5	12.5	10.8	16.0	7.2
Whites						
White Annette Hegg	12/7	12/8	11.0	9.9	17.2	8.8
White Rochford	12/5	12/4	13.0	11.5	16.2	7.8
Variegated						
Marble Annette Hegg	11/30	12/3	12.4	10.6	18.4	7.2
Gay Rochford	12/5	12/3	9.7	9.9	12.4	5.2

[1]On the first primary cyathia that bloomed in each pot.

[2]When 50 percent of the pots were judged ready to be marketed at the retail level.

1972 Trials

Manoa

I. Pinched and Single-Stem Crops
   A. Reds
      1. 'Annette Hegg Supreme.' This cultivar was more compact than 'Annette Hegg' but suffered the same disadvantages under the Manoa glasshouse

environment; splits, inflorescences, and weak stems occurred. A few plants were grown outside in other experiments and showed that the cultivars could be compact, sturdy, and with good color. The color tended to be brighter than 'Annette Hegg,' but good color development was not achieved in the greenhouse.

2. 'Lady Hegg.' This cultivar showed desirable dark-green foliage and dark-red bracts. Little splitting of the inflorescence occurred on the pinched plants, but single-stem plants split badly. 'Lady Hegg' was taller than 'Annette Hegg Supreme,' but the branches were as brittle. As on other 'Annette Hegg' selections, a gummy, white exudate was noted on the stems.
3. 'Orange Hegg.' This cultivar was selected for the orangish red of the bracts. At Manoa, color development was delayed in the greenhouse on pinched plants, but single-stem plants did not show as much orange as anticipated. The plants were tall, and the breaks were brittle. The inflorescences on the early single-stem plants split badly. The flowers produced much nectar, which made handling disagreeable.

B. Pinks

1. 'Pink Shinoda.' This cultivar is very similar to 'Eckespoint C-1 Pink' in that it has large bracts and vigorous, sturdy, upright growth. Pinched plants carried four to five breaks per plant. There was little splitting of the inflorescence on either pinched or single-stem plants. The bracts carried a reddish tinge to the veins, but the pink tended to fade with age.
2. 'Pink Annette Hegg.' Like others of the Hegg series, many breaks developed on pinched plants. The plants tended to be tall and the breaks somewhat brittle. The pink bracts had a green rim and green veins under the conditions of greenhouse culture. Splits developed on most inflorescences of the single-stem plants, but this was less noticeable on the later-developing pinched plants. There was a noticeable amount of sticky exudate on the stems.

In summary, the Hegg types were not suited for the warm conditions of the Manoa greenhouses. They were too tall (22-28 inches) and, despite good root systems, tended to be floppy. The lateral breaks were abundant but brittle. Single-stem plants were tall and showed a tendency for the axillary buds to break, producing weak, grassy shoots.

1973 Trials

Manoa

Several cultivars were received from Ecke Poinsettias. These were grown single stem, three per 6-inch pot, or pinched, two per 6-inch pot. A breakdown in the fertilization program led to generally poor quality with delayed flowering. The two best cultivars were 'Eckespoint H-2' and 'Eckespoint H-15,' with the former producing bracts earlier on compact plants about 8 to 10 inches tall with two and a half to three breaks per cutting. 'H-15' was 3 to 4 inches taller. Under greenhouse conditions, the bract color was not as intense a red, but outside both were stronger. Splitting was less than on 'Eckespoint C-1,' and both cultivars were shorter.

Selections of 'Annette Hegg,' such as 'Dark Red Annette Hegg' and 'Lady Hegg,' were not satisfactory in the greenhouse because of delayed color develop-

ment and splitting of the inflorescence. Plants grown outside were sturdier, shorter, and earlier to develop color. As noted previously, the 'Annette Hegg' types respond well to growing conditions where the night temperatures drop to the low 60s.

A new pink poinsettia, 'Prof. Laurie Pink' (formerly under the code number 'H-30 Pink'), was tall but showed the desirable tight inflorescence structure. In the greenhouse, it matured late with light-pink bracts. The inflorescence is smaller than 'C-1 Pink.'

Kula (Table 9)

Six new cultivars grown at the Station in 1973 were 'Annette Hegg Diva,' 'Annette Hegg Lady,' 'Prof. Laurie Pink,' 'Small's Winter Flame,' 'Eckespoint H-2,' and 'Eckespoint H-15.' All were potted with two cuttings per pot and pinched.

Table 9. 1973 poinsettia cultivar trial, pinched crop, Maui Research Center, Kula

Variety	Flower diameter (in)[1]	Plant height (in)	No. breaks/pot
Reds			
Eckespoint H-15	11.3	11.7	9.2
Eckespoint H-2	11.3	8.3	9.2
Small's Winter Flame	9.0	10.5	14.4
Annette Hegg Lady	10.8	10.4	10.6
Annette Hegg Diva	11.4	10.3	11.2
Pink			
Prof. Laurie Pink	10.8	10.6	8.2

[1]All plants had reached a salable condition by the last week of November 1973.

Under the greenhouse conditions at Kula, 'Eckespoint H-2' was the most attractive red. At 8 inches, the plants tended to be a little short, but the bracts were large and dark-red in color. 'Eckespoint H-15' and 'Lady Hegg' both showed green veining in the lower bracts and were 2 to 3 inches taller. 'Annette Hegg Diva' produced nicely colored, large bracts, but the branches were weak and broke too easily when the pots were moved. 'Small's Winter Flame' produced small bracts on heavily branched plants.

A few single-stem pots of 'Annette Hegg Lady' and 'Annette Hegg Diva' were grown with three plants per pot. The inflorescence diameter was somewhat larger for 'Annette Hegg Lady' (13.3 inches) grown in this way rather than pinched, but the height was only slightly taller (11.2 inches). 'Annette Hegg Lady' was better than 'Annette Hegg Diva' when grown single stem because of the weak stems on 'Annette Hegg Diva.' 'Annette Hegg Diva' was slightly shorter (10.3 inches) and bore slightly larger flowers (11.9 inches) when grown single stem.

'Prof. Laurie Pink' was a strong, clear pink with a desirable plant habit and moderate number of breaks. Although there were no other pink cultivars grown for comparison in this year, it was felt this was one of the most desirable pinks evaluated over several trials.

'Eckespoint H-2' and 'Eckespoint H-15' have been released as 'Eckespoint Scarlet Ribbons' and 'Eckespoint Reddy Light,' respectively.

1974 Trials

Manoa

The pink cultivars 'Eckespoint Prof. Laurie Pink,' and 'Trulypink' were grown in the Manoa glasshouses. Both are late blooming and tall growing and have medium-sized bracts of about 10 inches diameter; both have good leaf retention. 'Trulypink' was somewhat paler and showed more tendency to split in the warm glasshouse. The color should be better on both and the height somewhat reduced if grown cool.

Most of the season's experiments were carried on with 'Eckespoint Scarlet Ribbons' (formerly 'H-2'), which is a more compact red cultivar than 'Eckespoint C-1.' It has a shorter response period to short days, maturing about the first week of December from lights out October 5. The cultivar is being boosted on the Mainland as one to grow cool (60-64° F) during the fuel crisis, but it did respond well to the 68 to 72° F night temperatures of the glasshouse in Manoa. The inflorescence diameter of single-stem plants can easily exceed 14 inches, and pinched plants produced three to four breaks each with 8- to 10-inch inflorescences. Breaks on the pinched plants showed a tendency to droop, but the cultivar is not as brittle as the Hegg series.

SUMMARY

Both the Kula and Waiakea trials demonstrated that more intense color and shorter plants were attainable with night temperatures in the middle to low 60s than with higher night temperatures. The Eckespoint hybrids ('D-3,' 'C-35,' 'H-2,' 'H-15,' and 'San Diego'), 'Annette Hegg,' and many of the Mikkelsen hybrids appeared adapted for these cooler conditions. A tendency of the Mikkelsen hybrids and some of the Ecke hybrids to finish tall and come in early may be countered through the use of growth retardants.

The 'Eckespoint C-1' red and pink cultivars, as well as 'C-35,' 'C-54,' and 'H-2,' were apparently suited to warm growing conditions. Heavy feeding and early planting of cuttings yielded tall plants under Manoa conditions. Under warm nights, the cool-temperature types suffered from excessive height, split inflorescences, and poor color development.

Commercial growers should initiate their own trials based on these preliminary estimates of plant performance. Some cool-temperature types will do well in lower elevations with outdoor culture, especially with a drop in temperature at night into the 60s or low 70s.

Some of the undesirable features of large size and early flowering may be minimized by growing a pinched crop. The results of these experiments indicate

that the pinch could be delayed until late September in warm areas or in glasshouses and that plant quality would still be good. For large bracts, single-stem culture is recommended, although pinched plants will approach the same size if the number of breaks per pot is limited by early pruning. In choosing cultivars for pinched plants, the main qualities to keep in mind are number of breaks per pot, strength of the breaks, and compactness of growth.

In the time period covered by this publication, several cultivars have been added and dropped by the chief poinsettia propagators, Ecke and Mikkelsen. Growers should make their selections based on up-to-date catalog offerings.

Note: Plant patent laws prohibit the propagation of patented cultivars for resale unless licensed by the patent holder.

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Departmental Paper 14—April 1976